

# RESMAN tracers identify optimum frac strategy

Operator realizes an improvement of 270,000 bbl per well per year

## Challenge

An operator needed to identify the optimum stimulation strategy to maximize production in multi-stage frac wells using a reliable, low risk solution without intervention.

## Solution

RESMAN tracers (RES•OIL) with unique signatures were installed in the 12 stages of 8,000-ft horizontal well to measure inflow performance along the lateral. This enabled higher reliability when assessing inflow performance and years of monitoring because the surveys can be repeated throughout the lifetime of the tracer systems.

## Application

The RES•OIL tracer systems were integrated into the completion equipment before wellsite operations began, and then were run in hole with the completion. The operator used two distinct stimulation techniques along the lateral: two thirds of the stages were treated with a mechanical diversion, and one third was treated with dynamic diversion. During production startup, field-samples were collected and analyzed for tracers. Based on the tracer signals, RESMAN's patented Flush Out Model\* was used to quantify inflow per stage, thereby providing a direct performance comparison between the two stimulation techniques.

\* Refer to technical [Bulletin 2](#) at [www.resman.no](http://www.resman.no) for more information about RESMAN's Flush Out model and flow loop verification of model accuracy.

### RESMAN % Inflow Contribution per Frac Stage

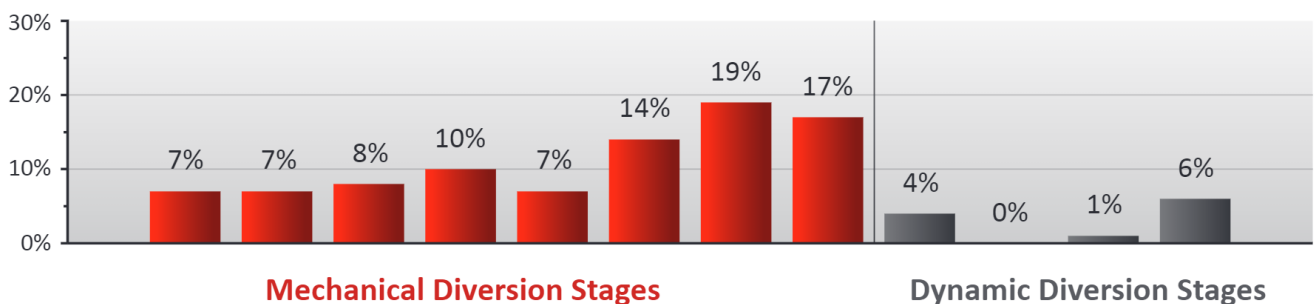


Fig. 1 – RESMAN relative inflow contribution per stage reveals the optimum stimulation technique.

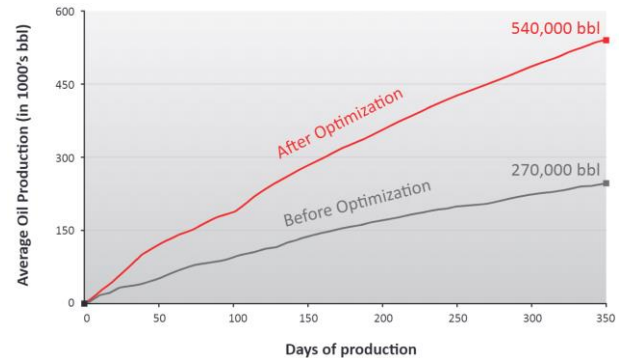


Fig. 2 – RESMAN findings enabled the optimization of frac treatment strategy and helped the operator double the average oil production per well from 270,000 to 540,000 barrels of oil per year.

## Results

The inflow distribution calculated for each stage (Fig. 1) revealed that the stages, stimulated using mechanical diversion, were performing significantly better than those using dynamic diversion, contributing three times more production on average. Based on this finding, the operator deployed the optimum stimulation method field-wide and realized an average improvement of 270,000 barrels of oil per well per year (Fig. 2). Following the successful results of this campaign, the operator installed RES•OIL systems in every new producer to monitor inflow distribution along the laterals and further refine its reservoir models and its drilling and completion strategies.

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